



EOC EUROPEAN OPTIC COMPANY

# SIRIUS

# SIRIUS-M

Night Vision Monocular



## OPERATION AND MAINTENANCE MANUAL



**Important Export Restrictions!** Shipment and Refund The merchandises which are in stock (we are not responsible for the problems caused by the delivery) will be sent to the customer within 5 days. If merchandise is not available at the moment of the order placement, we will do our best to deliver it as soon as possible. In case of unavailability an EOC employee informs the customer and makes necessary arrangements for the prompt delivery of the missing item to the stock. If it is not possible to fulfil the order, the customer is informed immediately and the paid money is refunded or a stock credit is advised. Please carefully inspect your merchandise immediately upon receipt. If any item does not meet your approval, you may return it to EOC GmbH during the following 14 days for refund. Shipping, handling, and EOC charges are non-refundable. Return shipping and insurance costs remain the responsibility of the customer. All items returned for exchange or refund must be unused, in the exact condition as the item was received and must come with the manual and all included accessories. The 14-day period starts once the merchandise is received by or on behalf of the customer from the shipping carrier and ends up the day EOC receives the merchandise back to its facilities. If a customer sends the item to the warranty service the customer has to attach the copy of the payment receipt. If there is no payment receipt, the customer will carry the repair costs. EOC does not accept any warranty responsibility for the devices that have been opened, dissembled or modified in any way by the customer.

## SAFETY SUMMARY

Before operating this product, carefully read and study this Operation and Maintenance Manual.

The Sirius is a precision electron-optical instrument, and requires careful handling. To avoid damage to the equipment or physical harm to the user when operating the Sirius, follow all **WARNINGS**, **CAUTIONS** and **NOTES**.

Below you will find definitions of the following alerts that appear throughout this Manual:

**WARNING** — Identifies a clear danger to the person operating the equipment.

**CAUTION** — Identifies risk of damage to the equipment.

**NOTE** — Serves to highlight essential procedures, conditions, and statements, or convey important instructional data to the user.

### **WARNING:**

**This product contains natural rubber latex which may cause allergic reactions!** The FDA has reported an increase in the number of deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.

### **WARNINGS:**

- The light from the unit infrared (IR) illuminator is invisible to the unaided eye when used in total darkness. **However, the light can be detected by other Night Vision Devices (NVD).**
- To reduce the risk of detection by another NVD, avoid prolonged activation of the IR illuminator.
- The IR light is more detectable by an NVD when used in smoke, fog and rain. Avoid prolonged activation of the unit IR illuminator in these conditions.
- This product contains natural rubber latex, which may cause allergic reactions.
- The intensifier's phosphor screen contains toxic materials. Please note the following:
  - If the intensifier tube breaks, be **extremely careful** to avoid inhaling the phosphor screen material. DO NOT allow the material to come in contact with your mouth, eyes, or any open wounds on the skin.
  - If the phosphor screen material comes in contact with your skin, wash it off immediately with soap and water.
  - If you inhale or swallow any phosphor screen material, drink a lot of water, induce vomiting, and **seek medical attention as soon as possible.**

The information provided in this manual is for familiarization purposes only; the contents may undergo further changes with no commitment by EOC to notify customers of any updates.

EOC assumes no responsibility for any misprints or other errors that this manual may contain.

©2012 by EOC Company. All rights reserved.

## **CAUTION:**

- The Sirius is a precision electron-optical instrument, and must be handled carefully at all times to prevent damage to the device and danger to the user.
- To protect the intensifier tube, **do not remove** the lens cap of the Sirius when the monocular is being operated in daylight conditions, or when the device is not in use.
- Use of the Sirius in brightly lit conditions may damage the unit's intensifier tube.
- Bright light sources such as firelight, headlights, searchlights, etc. can damage the Sirius. Avoid exposing the unit to these types of light sources.
- Before removing the lens cap, verify that the photoreceiver is open.
- DO NOT forget to open the photoreceiver after completing your mission.
- DO NOT attempt to force the controls past their stopping points, as this may cause damage to the mechanisms.
- The unit may be badly damaged if the tripod on which it is mounted collapses or overturns. Remove the unit from the tripod if it is not within your reach.
- Before replacing the intensifier tube, confirm that it is no longer covered by warranty.
- Thoroughly dry each component of the Sirius before placing them in the storage case.

## **NOTES:**

- The equipment requires some ambient light (moonlight, starlight, etc.) to operate.
- Performance of the device in nighttime conditions depends on the level of ambient light in the environment. Please remember the following:
  - The level of ambient light is reduced by the presence of clouds, shade, or objects that block natural light (trees, buildings, etc.).
  - The equipment is less effective when operated in shadows and other darkened areas.
  - The equipment is less effective when operated in rain, fog, sleet, snow, dust or smoke.
  - The equipment will not "see" through dense smoke.
- At operating temperatures below -20°C (-4°F), the use of an alkaline battery is not recommended, as the battery life will be severely reduced. Under said conditions, lithium-iron disulfide 1.5V AA batteries or their equivalent should be used.
- The IR illuminator is intended for increased illumination, as needed, when viewing at a close distance of up to 3m.
- For the purpose of returning defective components, retain all packaging materials.

## LIST OF CONTENTS

TITLE	PAGE
<b>Safety Summary</b>	2
<b>List of Contents</b>	4
<b>List of Figures</b>	5
<b>List of Tables</b>	6
<b>How to Use This Manual</b>	6
<b>1. INTRODUCTION</b>	<b>7</b>
<b>1.1 General Information</b>	7
1.1.1 Type of Manual	7
1.1.2 Model Number and Equipment Name	7
1.1.3 Purpose of Equipment	7
1.1.4 Reporting Equipment Improvement Recommendations	7
<b>1.2 Warranty Information and Registration</b>	<b>8</b>
1.2.1 Warranty Information	8
1.2.2 Limitation of Liability	8
1.2.3 Product Warranty Registration	8
1.2.4 Obtaining Warranty Service	9
<b>1.3 Cross References</b>	9
<b>1.4 List of Abbreviations</b>	10
<b>2. DESCRIPTION AND DATA</b>	<b>11</b>
<b>2.1 System Description</b>	11
<b>2.2 Specifications</b>	12
<b>2.3 Standard Components</b>	14
<b>2.4 Optional Equipment</b>	15
<b>2.5 Key Features</b>	17
<b>3. OPERATING INSTRUCTIONS</b>	<b>18</b>
<b>3.1. Installation and Mounting</b>	18
3.1.1 Battery Installation	18
3.1.2 Mounting the Sirius to a Goggle Kit	19
3.1.3 Mounting the Sirius to a Helmet	19
3.1.4 Mounting the Sirius to a Dual Bridge	20
3.1.5 Mounting an IR Illuminator to the Sirius	21
3.1.6 Mounting Accessory Lenses to the Sirius	21
3.1.7 Mounting a Camera/Camcorder to the Sirius	21
3.1.8 Universal Camera Adapter Application	22
<b>3.2 Controls and Indicators</b>	22
3.2.1 Controls and Indicators	22
<b>3.3 Operating Procedures</b>	24
3.3.1 Operating Procedures	24
3.3.2 IR Illuminator Operations	25
3.3.3 Operating Under Changing Light Conditions	26
3.3.4 Sirius Shut-Down	26
<b>3.4 Storage</b>	26
3.4.1 Preparation for Storage	26

<b>4. PREVENTIVE MAINTENANCE AND TROUBLESHOOTING</b>	<b>27</b>
<b>  4.1 Preventive Maintenance Checks and Services</b>	<b>27</b>
4.1.1 Preventive Maintenance Checks and Services (PMCS)	27
<b>  4.2 Troubleshooting</b>	<b>29</b>
4.2.1 Operator Troubleshooting	29
<b>  4.3 Identification of Operational Defects</b>	<b>29</b>
4.3.1 Operational Defects	29
4.3.2 Cosmetic Blemishes	30
<b>  4.4 Maintenance</b>	<b>32</b>
4.4.1 General	32
4.4.2 Cleaning Procedures	32
4.4.3 Battery Removal and Replacement	33
4.4.4 Goggle Kit Maintenance	33
<b>  4.5 Service/Packing and Unpacking</b>	<b>34</b>
4.5.1 Return Instructions	34
<b>APPENDIX</b>	<b>35</b>
<b>  A. Sirius List of Spare Parts</b>	<b>35</b>
<b>  B. Product Warranty Registration Card</b>	<b>36</b>
<b>  Alphabetical Index</b>	<b>39</b>

## LIST OF FIGURES

FIGURE	TITLE	PAGE
2-1	Sirius Night Vision Monocular	12
2-2	Sirius Standard Components	14
3-1	Battery Installation	18
3-2	Mounting the Sirius to a Goggle Kit	19
3-3	Mounting the Sirius to a Helmet	20
3-4	Mounting the Sirius to a Dual Bridge	20
3-5	Mounting an IR Illuminator to the Sirius	21
3-6	Mounting Accessory Lenses to the Sirius	21
3-7	Mounting a Camera/Camcorder to the Sirius	22
3-8	Universal Camera Adapter Application	22
3-9	Sirius Controls	23
3-10	IR Illuminator Operations	25
3-11	Photoreceiver	25
4-1	Shading	30
4-2	Edge Glow	30
4-3	Emission Points and Bright Spots	31
4-4	Fixed-Pattern Noise	31
4-5	Chicken Wire	31
4-6	Browpad Replacement	33
4-7	Chin Strap Reinstallation	33
4-8	Chin Cup Replacement	33
A-1	Sirius Spare Parts	35

## LIST OF TABLES

TABLE	TITLE	PAGE
2-1	Sirius System Description	12
2-2	Mechanical Data	12
2-3	Electrical Data	13
2-4	Optical Data	13
2-5	Environmental Data	14
2-6	Sirius Standard Components	15
2-7	Sirius Optional Equipment	15
3-1	Sirius Controls and Indicators	23
4-1	Preventive Maintenance Checks and Services	27
4-2	Operator Troubleshooting	29
A-1	Sirius List of Spare Parts	35

## HOW TO USE THIS MANUAL

### USAGE

You must familiarize yourself with the entire manual before operating the equipment. Before performing any kind of maintenance on your device, read the section on maintenance in its entirety. Follow all WARNINGS, CAUTIONS, and NOTES.

### MANUAL OVERVIEW

This manual contains sections on Operating and Maintaining the Sirius Night Vision Monocular.

The list of Spare Parts can be found in Appendix A.

The Product Warranty Registration Card can be found in Appendix B.

# INTRODUCTION

## 1.1 GENERAL INFORMATION

### 1.1.1 TYPE OF MANUAL

Operation and Maintenance (including a List of Spare Parts).

### 1.1.2 MODEL NUMBER AND EQUIPMENT NAME

Sirius Multi-Use Minimonocular

SiriusM Multi-Use Minimonocular

### 1.1.3 PURPOSE OF EQUIPMENT

**To provide the operator with the ability to observe at night under moonlight and starlight conditions.**

The Sirius can be used as a handheld, head-mounted or helmet-mounted device to allow walking, short-range surveillance, map reading, vehicle maintenance, and administering of first aid.

The Sirius allows for horizontal and vertical adjustments when mounted to the user's head or helmet, and is equipped with an infrared light-emitting source (IR illuminator).

### 1.1.4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

Recommendations from the user for improvements to the device are encouraged.

Mail your comments to EOC EUROPEAN OPTIC COMPANY GmbH, Dopplerweg 4A, 40591, Düsseldorf, Germany.

Or, send an email to [info@eoccompany.de](mailto:info@eoccompany.de).

## **1.2 WARRANTY INFORMATION AND REGISTRATION**

### **1.2.1 WARRANTY INFORMATION**

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of two (2) years from the date of purchase. In the event that a defect covered by the below warranty occurs during the applicable period stated above, EOC Company, at its discretion, will either repair or replace the product; such action on the part of EOC Company shall be the full extent of EOC Company's liability, and the Customer's sole and exclusive reparation. This warranty does not cover a product if it has (a) been used in ways other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than EOC Company without prior written consent of EOC Company; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either EOC Company or the EOC Company dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of EOC Company. EOC Company shall not be responsible for any defects or damage that in EOC Company's view are a result from the mishandling, abuse, misuse, improper storage or improper operation of the device, including use in conjunction with equipment that is electrically or mechanically incompatible with, or of inferior quality to, the product, as well as failure to maintain the environmental conditions specified by the manufacturer. CUSTOMER IS HEREBY NOTIFIED THAT OPERATION OF THE EQUIPMENT DURING DAYLIGHT HOURS OR UNDER ANY EXCESSIVE LIGHT CONDITIONS MAY PERMANENTLY DAMAGE THE INTERNAL COMPONENTS OF THE UNIT AND SAID DAMAGE WILL NOT BE COVERED UNDER THIS WARRANTY. This warranty is extended only to the original purchaser. Any breach of this warranty shall be enforced unless the customer notifies EOC Company at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

### **1.2.2 LIMITATION OF LIABILITY**

EOC Company will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. EOC Company's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by EOC Company to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside EOC Company and the Customer; EOC Company's obligations under this Agreement extend solely to the Customer. EOC Company's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to EOC Company by the customer or customer's dealer. EOC Company shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability or any other theory of liability.

### **1.2.3 PRODUCT WARRANTY REGISTRATION**

In order to validate the warranty on your product, EOC Company must receive a completed Product Warranty Registration Card for each unit, or the Customer can complete a warranty registration on our website, at [www.eoccompany.de](http://www.eoccompany.de). Please complete the included form (Appendix C) and immediately mail it to our Service Center:

EOC EUROPEAN OPTIC COMPANY GmbH  
Dopplerweg 4A,  
40591, Düsseldorf, Germany.

#### **1.2.4 OBTAINING WARRANTY SERVICE**

To obtain warranty service on your unit, the End-user (Customer) must notify the EOC Company service department via email. Send any requests to info@eoccompany.de to receive a Return Merchandise Authorization number (RMA). When returning any device, please take in the product to your retailer, or send the product, postage paid and with a copy of your sales receipt, to EOC Corporation's service center at the address listed above. All merchandise must be fully insured with the correct postage; EOC Company will not be responsible for improper postage or merchandise that becomes lost or damaged during shipment. When sending product back, please clearly write the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, the Customer's Name, a Return Address, reason for the return, Contact information (valid telephone numbers and/or an e-mail address), and proof of purchase that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA# listed may be refused, or a significant delay in processing may occur. Estimated Warranty service time is 10-20 business days. The End-user/ Customer is responsible for postage to EOC Company for warranty service. EOC Company will cover return postage/ shipping after warranty repair to the End-user/ Customer only if the product is covered by the aforementioned warranty. EOC Company will return the product after warranty service by domestic UPS Ground service and/ or domestic mail. Should any other requested, required or international shipping methods be necessary, the postage/ shipping fee will be the responsibility of the End-user/ Customer.

### **1.3 CROSS REFERENCES**

<b>COMMON NAME</b>	<b>OFFICIAL NAME</b>
Allen Wrench	Socket Head Screw Key
Battery Compartment	Battery Box Cover
Shipping Case	Textile Bag
Cotton Swab	Disposable Applicator
Neoprene Jack Plug	Plug Assembly
O-Ring	Gasket
Safety Screw	Electrical Dial-Knob Lock
Pattern Generator	Optical Instrument Reticle
Lens Covers	Exit Port Covers
Paddle Switch	Remote Cable Switch
Batteries	AA
Technical Manual	Operator and Field Maintenance Manual
Tape Fastener Loop	Fastener, Loop Tape
Tape Fastener Hook	Fastener, Hook Tape

## 1.4 LIST OF ABBREVIATIONS

C	Celsius (Centigrade)
CCW	counterclockwise
Cont'd	Continued
CW	clockwise
Dia	diameter
F	Fahrenheit
FOV	Field of View
g	gram
Gen	Generation
H	Height
hr	hour
IR	infrared
IT	Intensifier Tube
L	Length
LED	Light Emitting Diode
lx	lux
m	meter
mA	milliampere
min	minute
mm	millimeter
mW	milliwatt
nm	nanometer
No	Number
NV	Night Vision
NVD	Night Vision Device
Para	Paragraph
PMCS	Preventive Maintenance Checks and Services
QTY	Quantity
RMA#	Return Merchandise Authorization number
s	second
seq	sequence
SR	Service Representative
VDC	Volts Direct Current
V	Volt
W	Width

# DESCRIPTION AND DATA

## 2.1 SYSTEM DESCRIPTION

The Sirius is a hand-held, head-mounted or helmet-mounted night vision system that allows the user to operate it while walking, conducting short-range surveillance, reading maps, conducting vehicle maintenance, or administering first aid in both moonlight and starlight conditions.

The Sirius utilizes the principle of intensification of the residual light that is reflected from the surrounding objects. The optical system of the unit consists of an objective lens, an intensifier tube (IT), and an eyepiece.

The Sirius automatic brightness adjustment system retains the same gain (image brightness), even under unsteady light conditions.

The Sirius automatic protective system controls illumination through a photoreceiver. If the illumination level surpasses 100-300 lx for more than 10 s, the unit will shut off automatically.

A built-in IR illuminator makes it possible to use the unit in low light or total darkness.

The Sirius uses LED lights to indicate illumination level, low battery, and to show the user that the IR illuminator is on.

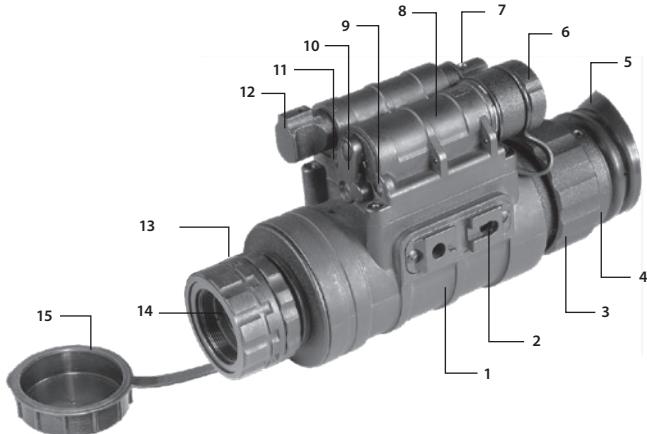
The Sirius allows for vertical and fore-and-aft adjustment when mounted to the user's head or helmet, when focusing the lens, and when focusing the eyepiece.

Additionally, the Sirius-M version incorporates gain control, which allows the user to increase or decrease the brightness of the image to compensate for overly bright or extremely dark conditions.

### NOTE:

The equipment requires some light (moonlight, starlight, etc.) to operate. Performance of the device depends upon the level of ambient light in the environment. Please remember the following:

- The level of ambient light in the environment is reduced by the presence of clouds, shade, or objects that block natural light (trees, buildings, etc.).
- The equipment is less effective when operated in shadows and other darkened areas.
- The equipment is less effective when operated in rain, fog, sleet, snow, or smoke.
- Under starlight conditions, particularly in low-contrast environments such as snow-covered territory, sandy deserts, large bodies of water or grassy hills, the visibility may degrade, thereby disguising or masking changes in terrain.
- The equipment will not "see" through dense smoke.



**FIGURE 2-1. SIRIUS NIGHT VISION MONOCULAR**

**TABLE 2-1. SIRIUS SYSTEM DESCRIPTION**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Body	9	Photo Receiver
2	Rail	10	Pivotal Focusing Lens
3	Eyepiece Ring	11	IR Illuminator
4	Eyepiece	12	Turn-pull Function Switch
5	Eye-cup	13	Focus Ring
6	Battery Cap	14	Lens
7	Gain Control Knob *	15	Lens Cap
8	Battery Compartment		

\* For Sirius-M version.

## 2.2 SPECIFICATIONS

**TABLE 2-2. MECHANICAL DATA**

EQUIPMENT ITEM	DIMENSIONS, MM (L X W X H)/(DIA X L)	WEIGHT, G
Sirius / Sirius-M Night Vision Monocular	210x60x75	650/660**
Flip-up Helmet Mount*	120x170x150	280
Goggle Kit*	280x180x80	295
Dual Bridge*	54x22x24	34
Camera Adapter*	Dia 60x22	52
3X Afocal Lens*	Dia 77x95	553
3X Lens*	Dia 60x109	450

**TABLE 2-2. CONTINUED**

EQUIPMENT ITEM	DIMENSIONS, MM (L X W X H)/(DIA X L)	WEIGHT, G
5X Lens*	Dia 80x141	500
8X Lens*	Dia 96x211	730

\* Optional

\*\* For Sirius -M version.

**TABLE 2-3. ELECTRICAL DATA**

ITEM	DATA
Battery	One AA (1.5 V) or 123A (3 V)
Consumption Current*:	
- at 1.5 VDC	75 mA
- at 3.0 VDC	38 mA
Continuous Operation* at 20 °C (68°F):	
- AA Alkaline Battery	30 (IT Gen. 2+) / 25 (IT Gen. 3)
- 123A Lithium Battery	60 (IT Gen. 2+) / 50 (IT Gen. 3)

\* With IR illuminator off.

**TABLE 2-4. OPTICAL DATA**

ITEM	DATA
Magnification:	
— with 1X Lens	(1±0.05) X
— with 3X Lens*	(3.3±0.15) X
— with 5X Lens*	(5±0.2) X
— with 8X Lens*	(8±0.5) X
— with 3X Afocal Lens* and F27 Lens	(3±0.15) X
1X Lens:	
— Focal Length	24 mm
— Lens F/number	1:1.2
Focus Range:	
— with 1X Lens	0.25 m to infinity
— with 3X Lens*	5 m to infinity
— with 5X Lens*	10 m to infinity
— with 8X Lens*	15 m to infinity
— with 3X Afocal Lens*	5 m to infinity
FOV:	
— with 1X Lens	40°
— with 3X Lens*	12°30'
— with 5X Lens*	9°30'
— with 8X Lens*	6°30'
— with 3X Afocal Lens*	9°
Exit Pupil Diameter	10 mm
Eyepiece Focal Length	24 mm
Eye Relief	21.5 mm
Eyepiece Diopter Adjustment	-5 to +5 diopters

\* Optional.

**TABLE 2-4. CONTINUED**

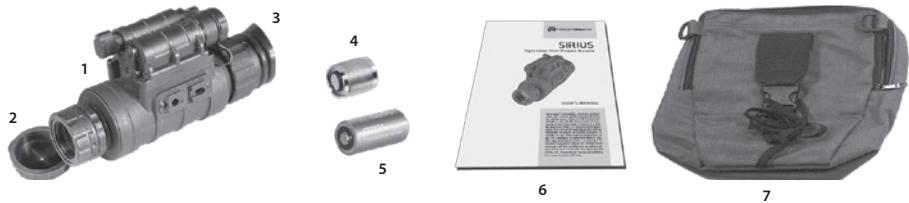
ITEM	DATA
Built-in IR Illuminator:	
— Power	50 mW
— Illumination Range	20 m
— Focus Distance	3 m
— Illumination Wavelength	850 nm

**TABLE 2-5. ENVIRONMENTAL DATA**

ITEM	DATA
Operating Temperature	-40 to +50 °C
Storage Temperature	-50 to +70 °C
Humidity	95 %, 25 °C to 40 °C for 48 hr
Illumination Required	Natural night illumination (overcast starlight to moonlight)
Immersion	20 m for 1 hr
MIL-STD-810	Complies

## 2.3 STANDARD COMPONENTS

The standard components of the Sirius are shown in Figure 2-2 and listed in Table 2-6. The ITEM NO. column indicates the number used to identify items in Figure 2-2.

**FIGURE 2-2. SIRIUS STANDARD COMPONENTS****TABLE 2-6. SIRIUS STANDARD COMPONENTS**

ITEM NO.	DESCRIPTION	QUANTITY
1	Night Vision Monocular	1
2	Lens Cap	1
3	Eye-cup	1
4	Battery Adapter	1
5	Battery 123A Lithium	1
6	Operation and Maintenance Manual	1
7	Carrying Case	1

### **1) EOC Company Sirius Night Vision Monocular**

Monocular night vision device with unity magnification.

### **2) Lens Cap**

A cap used to protect the lens and to be used when testing the unit in daylight.

### **3) Eye-cup**

A rubber cup used to protect the eyepiece as well as provide comfort for the operator.

### **4) Battery Adapter**

Allows of use of a single 3V CR123 or 1.5V AA batteries.

### **5) Battery 123A Lithium**

A single, 123A lithium battery used to power the unit.

### **6) Operation and Maintenance Manual**

Provides safety information, equipment description, mounting procedures, operating instructions, and preventive maintenance checks and service (including a List of Spare Parts).

### **7) Carrying Case**

A protective case used for storing and carrying of the Sirius and its accessories.

## **2.4 OPTIONAL EQUIPMENT**

Optional items are shown and listed in Table 2-7.

The PART NO. column indicates the primary number used by the manufacturer to identify an item.

**TABLE 2-7. SIRIUS OPTIONAL EQUIPMENT**

IMAGE	DESCRIPTION	PART NO.
	<b>3X Afocal Lens</b> Quickly converts the Sirius into a long-range night vision device. Ideal for long range observation.	ANAF3X0001
	<b>3X Lens</b> Quickly converts the Sirius into a long-range night vision device. Ideal for long range observation.	ANLE3X0002
	<b>5X Lens</b> Quickly converts the Sirius into a long-range night vision device. Ideal for long range observation.	ANLE5X0001
	<b>8X Lens</b> Quickly converts the Sirius into a long-range night vision device. Ideal for long range observation.	ANLE8X0001
	<b>Goggle Kit</b> Adjustable universal assembly that secures the Sirius to the operator's head providing hands-free operation.	ANHG000003

TABLE 2-7. CONTINUED

IMAGE	DESCRIPTION	PART NO.
	<b>Flip-up Helmet Mount</b> Helps to mount the Sirius on a range of ballistic helmets.	ANHM000002
	<b>Shutter Eye Guard</b> Prevents light from being emitted by the Sirius eye-piece. If the user's face is illuminated, they become visible to others in the field, and their position becomes compromised.	ANECC000001
	<b>IR810 IR Illuminator</b> Extra long-range infrared illuminator. Provides greater viewing capabilities when the environment has little or no ambient light.	IAIR810IR000001
	<b>IR850 IR Illuminator</b> Extra long-range infrared illuminator. Provides greater viewing capabilities when the environment has little or no ambient light.	IAIR850IR000001
	<b>Dual Bridge</b> An adapter that allows the Sirius to be attached in a binocular configuration to a goggle kit or flip-up helmet mount.	ANKI000003
	<b>Camera Adapter</b> An adapter with step down ring that allows the Sirius to be attached to any 35 mm SLR camera or 8 mm camcorder.	ANAM000016
	<b>Universal Camera Adapter</b> The system life tracker allows the user to verify operational start and end times of the individual unit, down to the exact minute.	ANAM000006
	<b>Life Tracker System</b> System/LIT service life recorder is a feature that lets you measure the hours of operation (within one minute) that have been used on the system.	ANCA000001
	<b>Hard Shipping/Storage Case</b> A protective case used for the shipping/ storage of the Sirius and its accessories.	ANHC000001

## 2.5 KEY FEATURES

- Gen 2+ intensifier tube
- Automatic bright light cut-off system to protect the intensifier tube
- LED lights visible in the eyepiece viewing area that indicate operation of the bright light cut-off system and IR illuminator, as well as to alert the user of a low battery
- Built-in IR illuminator with pivotal lens to select between IR spot and flood beam
- Left or right eye use
- Lightweight
- Compact and robust design
- Easy to operate
- Serviceability under severe conditions
- High-performance
- Highly reliable
- Powered by single CR123A or AA battery
- Head or helmet-mountable for hands-free usage
- Automatic ON/ OFF feature with flip-up head/ helmet mount
- Adaptable for use with cameras
- Manual gain control (Sirius-M version) for the best possible image contrast under very high and very low light conditions
- Waterproof
- Limited two-year warranty

# OPERATING INSTRUCTIONS

## 3.1 INSTALLATION AND MOUNTING

### CAUTION:

To protect the intensifier tube when the sight is not in use or when it is being operated in daylight, keep the protective lens cap securely fitted over the lens.

### 3.1.1 BATTERY INSTALLATION

The Sirius operates on a single CR123A or AA battery.

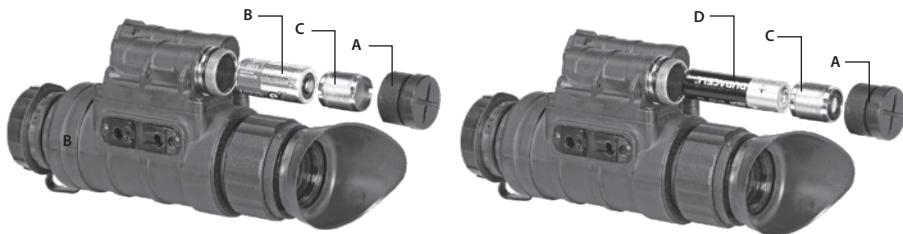
Depending on the size of the battery used, it may be necessary to reposition the battery adapter within the battery cap.

### NOTE:

If operating the device at temperatures below -20°C (-4°F), the use of an alkaline battery is not recommended, as the severe cold will adversely affect the life of the battery. In these conditions, it is recommended that you use a lithium-iron disulfide 1.5V AA battery, or its equivalent.

Install the CR123A battery as follows:

1. Unscrew the battery cap (A) and insert the CR123A battery (B), observing the polarity markings on the body of the device.
2. With the battery adapter (C) installed, screw the battery cap (A) back on securely.



**FIGURE 3-1. BATTERY INSTALLATION**

Install the AA battery as follows:

1. Unscrew the battery cap (A).
2. Unscrew the battery adapter (C) from the cap, turn it around, and screw in the other end.
3. Insert the AA battery (D), observing the polarity markings as indicated on the body of the device.
4. Screw the battery cap (A) back into place.

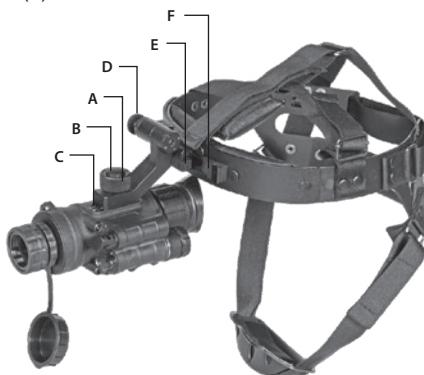
### **3.1.2 MOUNTING THE SIRIUS TO A GOGGLE KIT**

Mount the Sirius to the optional goggle kit as follows:

1. Put on the goggle kit. Adjust the goggle kit strap pads until the goggles fit securely around your head. Remove the goggle kit.
2. Loosen the screw (A). While pushing down on the button (B), insert the Sirius rail into the guide (C) of the goggle kit bracket. Tighten the screw (A). See Figure 3-2; the unit is shown in the correct positioning for the right eye.
3. Put on the goggle kit, now mounted with the Sirius.
4. To adjust the equipment for greater comfort, loosen the screw (A) and move the unit along the guide (C).
5. The goggle kit has a flip-up mechanism. Push the button (D) of the goggle kit bracket and lift the unit up until it reaches its top position. The unit will automatically turn off when it reaches this position.
6. Push the same button (D) to lower the unit into the correct viewing position. Turn the unit back on to continue your session.

Figure 3-2 shows the Sirius in the correct position for the right eye. To readjust the unit for the other eye, remove the unit from the goggle kit bracket. Turn the unit around (180°) and mount it on the bracket through the rail on the second side. With the button (E) pushed, move the unit along the slide-rail (F) until the desired, most comfortable position is reached.

To remove the Sirius from the goggle kit, loosen the screw (A), push the button (B), and slide the unit out of the bracket guide (C).



**FIGURE 3-2. MOUNTING SIRIUS TO A GOGGLE KIT**

### **3.1.3 MOUNTING THE SIRIUS TO A HELMET**

An optional flip-up helmet mount can be used to attach the Sirius to a helmet. The helmet mount fits the Sirius securely onto helmet via a rugged strapping device and grooved hooks. With the helmet mount, the Sirius can be positioned directly in front of the user's eyes, or flipped backwards, out of the field of view.

Mount the Sirius to a helmet as follows:

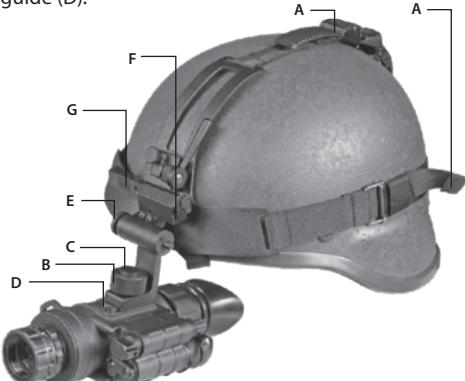
1. Attach the mount to the helmet as shown in Figure 3-3.
2. Adjust and tighten the straps (A).
3. Loosen the screw (B). With the button (C) pushed down, insert the Sirius rail into the guide (D) of the helmet mount bracket. Tighten the screw (B).
4. Put on the helmet with the Sirius attached.
5. Push the button (F) and move the unit along the slide-rail (G) until the most comfortable position is reached.
6. To adjust the unit for comfort, loosen the screw (B) and move the unit along the guide (D).

7. To remove the Sirius and turn it around, push the button down (E) and lift the unit up until it reaches the top position. Once it reaches this position, the unit will turn off automatically.

8. Push the same button (E) to lower the Sirius into the proper viewing position. Turn the unit on to proceed with your mission.

In Figure 3-3, the Sirius is shown in the correct position for the left eye. To readjust the Sirius for the left eye, reverse its positioning and reinstall it on the helmet mount bracket (see Figure 3-3). Use the second unit rail located on the opposite side of the unit. Push the button (F) and move the unit along the slide-rail (G) until the most comfortable position is reached.

To remove the Sirius from the helmet mount, loosen the screw (B), push down on the button (C), and slide the unit out of the guide (D).



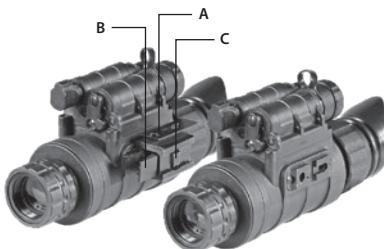
**FIGURE 3-3. MOUNTING THE SIRIUS TO A HELMET**

### **3.1.4 MOUNTING THE SIRIUS TO A DUAL BRIDGE**

To install two Sirius units onto a single binocular device, use the optional dual bridge. Perform the following steps:

1. Align the Sirius with the dual bridge (A).

2. Press down on the clamps (B) that are located on the front of the bridge.



**FIGURE 3-4. MOUNTING THE SIRIUS TO A DUAL BRIDGE**

3. Pull the unit back until the alignment boss is lined up against the groove (C) of the dual bridge. Push the unit back until it is securely fixed to the dual bridge.

4. Perform steps 1-3 with the second Sirius unit.

To remove the Sirius from the dual bridge, press down on the front clamps and slide the unit forward.

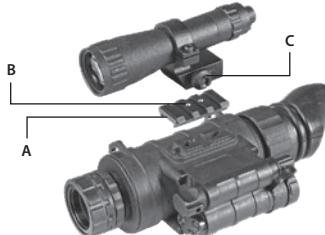
To configure the Sirius for long-range observation with binoculars, mount the 3x accessory lenses to the units as seen in Part 3.1.7 of this Manual.

To mount the dual bridge to the optional goggle kit, see Part 3.1.2 of this Manual.

### **3.1.5 MOUNTING AN IR ILLUMINATOR TO THE SIRIUS**

To mount an IR illuminator to the Sirius, use the optional Weaver rail adapter. Perform the following steps:

1. Install the Weaver rail adapter (A) onto one of the Sirius rails.
2. Tighten the two fixing screws (B) on the adapter.
3. Loosen the IR illuminator fixing screw (C).
4. Mount the IR illuminator on the Weaver rail adapter and tighten the fixing screw (C).



**FIGURE 3-5. MOUNTING AN IR ILLUMINATOR TO THE SIRIUS**

### **3.1.7 MOUNTING ACCESSORY LENSES TO THE SIRIUS**

To mount the 3X afocal lens (A) to the device, screw it into the threading of the standard 1X objective lens on the Sirius.

To mount the 3X (B), 5X (C) or 8X (D) lens, unscrew the existing 1X objective lens of the Sirius and screw in the 3X, 5X or 8X lens in its place.

The Sirius configured with an 8X lens can be installed on a tripod. To mount the unit on a tripod, use the 1/4" threaded socket (E) on the housing of the 8X lens.



**FIGURE 3-6. MOUNTING ACCESSORY LENSES TO SIRIUS**

**NOTE:**

The unit may be badly damaged if the tripod collapses or overturns. Remove the unit from the tripod if it is not within your reach.

### **3.1.8 MOUNTING A CAMERA/ CAMCORDER TO THE SIRIUS**

To mount any 35mm SLR photographic camera or 8mm camcorder to the Sirius, use the optional camera adapter and perform the following:

1. Using the (M37x0.75 threaded) adapter ring (B), screw the (M52x0.75 threaded) adapter (A) into the front lens of the photographic camera or video camera.
2. Remove the eyecup from the Sirius eyepiece.
3. Connect the adapter with the eyepiece and tighten the three fixing screws (C) located on the adapter.

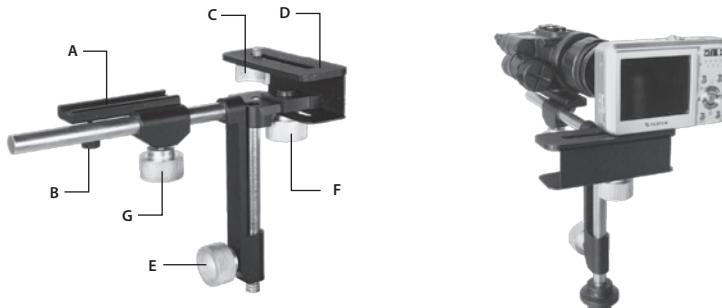


**FIGURE 3-7. MOUNTING A CAMERA/ CAMCORDER TO THE SIRIUS**

### 3.1.9 UNIVERSAL CAMERA ADAPTER APPLICATION

To mount the Sirius (affixed with a camera or video recorder) to a tripod, you will need a universal camera adapter. Mount the connected devices to a tripod as follows:

1. Screw the adapter onto the tripod.
2. Remove the eyecup from the Sirius eyepiece.
3. Install the Sirius on the adapter rail (A) and tighten the fixing screw (B).
4. Install the camera on the adapter rail (C) and insert the fixing screw (D) into the tripod socket of the camera. Tighten the fixing screw.
5. Loosen the screws one by one. Align the optical axis of the Sirius with the camera objective. Tighten the screws (E and F).
6. To focus the image, loosen the screw (G) and adjust the distance between the monocular and the camera's eyepiece. Tighten the screw (G).



**FIGURE 3-8. UNIVERSAL CAMERA ADAPTER APPLICATION**

## 3.2 CONTROLS AND INDICATORS

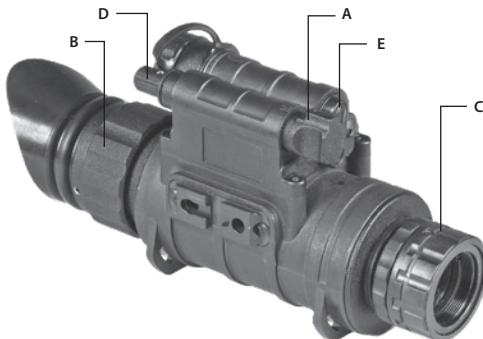
### 3.2.1 CONTROLS AND INDICATORS

The Sirius controls and indicators are defined in Table 3-1.

The Sirius controls are shown in Figure 3-10.

#### CAUTION:

DO NOT over-adjust the controls by forcing them past their stopping points.



**FIGURE 3-9. SIRIUS CONTROLS**

**TABLE 3-1. SIRIUS CONTROLS AND INDICATORS**

CONTROL/INDICATOR	FUNCTION
Turn-pull Function Switch (Figure 3-10, A)	OFF position — the unit is off.  ON position — the unit is on (IT powered). Turn the unit on by turning the switch CCW from OFF to ON.
	IR position — the unit is on, and the IR illuminator is activated. Activate the IR illuminator by pulling it out and turning the switch CW from ON to the IR position.
Eyepiece Ring (Figure 3-10, B)	Adjusts the unit diopter. The total dioptric range is covered in a 1/2 ring revolution.
Focusing Ring (Figure 3-10, C)	Focuses the lens. Adjusts for sharpest view of the scene. The total focus range is covered in a 1/3 ring revolution.
Gain Control Knob* (Figure 3-10, D)	Adjusts for image contrast.
Pivotal Focusing Lens (Figure 3-10, E)	Allows the user to choose between the following: 1. The IR illuminator spot beam. When the pivotal focusing lens is placed in the leftmost position of the window of the IR illuminator, the photoreceiver is open. 2. The IR illuminator flood beam. When the focusing lens is placed in the center position, the photoreceiver is opened. 3. The photoreceiver will close when the focusing lens is placed in the rightmost position.
Built-in LED Indicators	A GREEN GLOW in the eyepiece viewing area indicates excessive light conditions. After 10 s of exposure to bright light, the intensifier will shut off automatically. The unit will turn back on again when moved away from the excessive light.  A PERMANENT RED GLOW in the eyepiece viewing area indicates that the IR illuminator is operating.  A FLASHING RED LIGHT in the eyepiece viewing area indicates that the battery is low.

\* For Sirius-M version only.

## 3.3 OPERATING PROCEDURES

### 3.3.1 OPERATING PROCEDURES

These procedures should be performed under nighttime conditions only.

#### CAUTION:

Use of the Sirius brightly lit conditions may damage the unit's intensifier tube.

1. Verify that the battery is installed as indicated on the monocular body.
2. Make a visual estimation of the illumination level in the viewing area. The required level of illumination is less than 1 lx (late twilight sky conditions).
3. Remove the lens cap and place it over the housing of the lens.

#### CAUTION:

Before removing the objective lens cap, verify that the photoreceiver is open.

4. Turn the function switch ON. After a slight delay, a green glow will appear in the eyepiece of the monocular.
5. Adjust the unit diopter by rotating the ring of the eyepiece.
6. Observe the scene. Rotate the focus ring until the image is clear and sharp.
7. Adjust the brightness and contrast of the image using the gain control knob (SiriusM version).

#### CAUTION:

Bright sources such as firelight, headlights, searchlights, etc. can damage the Sirius. Avoid exposing the unit to these types of light sources.

7. Adjust the image brightness using the gain control knob (SiriusM version) to achieve the best possible image contrast.

### 3.3.2 IR ILLUMINATOR OPERATIONS

#### CAUTION:

When operating the device in extremely dark conditions, the light from the unit's IR illuminator will be invisible to the unaided eye. However, the light can be detected by other NVDs.

#### NOTE:

The IR illuminator is designed to provide additional illumination (when needed) while viewing scenes or targets from a short distance (up to 3m).

1. To activate the IR illuminator, turn the monocular on. Pull the IR illuminator out and flip the turn-pull function switch (A) CW from ON to the IR position. A red light will appear in the eyepiece to indicate that the IR illuminator is operating.
2. Focus the IR light, if necessary, by placing the pivotal focusing lens (B) onto the IR illuminator output window (C).



**FIGURE 3-10. IR ILLUMINATOR OPERATIONS**

### **3.3.3 OPERATING UNDER CHANGING LIGHT CONDITIONS**

If the ambient light level exceeds the limit of 100-300 lx for more than 10 s, the Sirius automatic protective system will shut off the intensifier tube. If a mission must be carried out in changing light conditions, the user can shut down the protective system manually by closing the photoreceiver (A) with the pivotal focusing lens.

**CAUTION:**

DO NOT forget to open the photoreceiver after completing your mission.



**FIGURE 3-11. PHOTORECEIVER**

### **3.3.4 SIRIUS SHUT-DOWN**

1. Turn the function switch to OFF. The green glow of the viewing area will fade to black.
2. Secure the lens cap over the objective lens.
3. If necessary, remove the unit from the rail (from the scope lens). Remove the unit by following the mounting instructions in reverse..
4. Unscrew the battery cap and take out the battery. Replace the battery cap. Do not store the unit with the battery still in it.
5. Store the unit and all accessories in the case.

## **3.4 STORAGE**

### **3.4.1 PREPARATIONS FOR STORAGE**

Prepare the Sirius for storage as follows:

1. Verify that the Sirius and all accessories are clean and dry before returning them to the storage case.
2. Secure the cap over the objective lens.
3. Remove the battery.
4. Place the Sirius and accessories in the appropriate locations in the case, and close the cover.

# PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

## 4.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

### 4.1.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Table 4-1: Preventive Maintenance Checks and Services has been provided so that you can keep your equipment operable and in good condition.

Perform all functional tests in the order listed in Table 4-1.

Operating Procedures are detailed in Chapter 3.

#### A. Cautions

Always observe any CAUTIONS that appear in the table.

#### B. Explanation of Table Entries

**SEQ NO. column.** Sequence numbers are for reference and appear in the order required to perform checks and services.

**LOCATION/ITEM TO CHECK/SERVICE column.** Indicates the location and the item to be checked or serviced.

**PROCEDURE column.** Details the checking/ servicing procedure.

**NOT FULLY MISSION CAPABLE IF column.** Indicates what faults will prevent your equipment from operating successfully.

TABLE 4-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

SEQ NO.	LOCATION ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF
BEFORE OPERATION CHECKS			
1	Completeness	Open the carrying case and inventory items by means of comparing with the data specified in this manual.	Items are missing.
2	Soft Carrying Case	Shake out loose dirt or foreign material. Inspect for tears, cuts, excess wear or damage to the mounting clips.	
3	External Surfaces	Inspect for cracks or damage. Scratches and gouges are OK if operation is not affected.	Cracked or damaged.
4	Lens Cap	Inspect for cracked, torn, or missing lens caps.	Cap is torn or cut. Cup is not secured to the housing of the lens.
5	Eyecup	Inspect for dirt, dust. Inspect for cracked or torn, bent, broken or improperly fitting eyecup. If necessary, clean as per Para 4.4.2.	Cup torn or cut.

**TABLE 3-1. CONTINUED**

SEQ NO.	LOCATION ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF
6	Battery Adapter/Compartment/ Cap	Verify that the battery adapter is present. Inspect for corrosion, moisture, corroded or defective contacts. Verify that the o-ring is present.	Adapter is missing, contacts damaged or corroded, or o-ring is missing.
7	Function Switch	Check the switch for operation (without a battery).	Switch has no definite stopping points. Switch knob is broken or missing.
8	Pivotal Focusing Lens	Check to make sure pivotal focusing lens is present.	Pivotal focusing lens is missing.
9	Gain Control Knob (for SiriusM)	Check knob for operation.	Knob inoperative. Knob is missing.
10	Lenses	Inspect optical surfaces for dirt, fingerprint residue, scratches, chips, or cracks.	Scratches or chips hinder vision with Sirius turned on. Cracks are present. Photoreceiver damaged. Pivotal focusing lens damaged.
11	Focusing Ring	Rotate the focusing ring to ensure free movement (range is approximately 1/3 turn).	Ring gets stuck or adversely affects the user's ability to properly focus the unit.
12	Eyepiece Ring	Rotate the eyepiece ring to make sure the eyepiece is not too tight or too loose. Range is approximately ½ turn.	Ring gets stuck, is too loose, or adversely affects the user's ability to properly adjust the diopter.
13	Optional Equipment	Inspect optional items for dirt, or corrosion, damage, and missing parts. Check for proper operation. If necessary, clean as detailed in Part 4.4.2.	Equipment is damaged or parts are missing.

**OPERATIONAL CHECKS****CAUTION:**

Do not activate the Sirius in daylight unless the lens cap is on, or you are operating under dark conditions.

**CAUTION:**

Do not forget to open the photoreceiver after finishing operational checks.

**NOTE:**

Daylight checks are described below.

14	Function Switch	Install the battery. Verify that the photoreceiver is open. Turn the switch from OFF to ON. Look for the green glow in eyepiece (it should appear after a slight delay), and wait about 10 s for image to disappear.  Look for a flashing red light in eyepiece viewing area.  Close the photoreceiver by placing the pivotal focusing lens in rightmost position. Pull out the IR and turn the switch from ON to the IR position. Look for a permanent red glow in the eyepiece viewing area. Turn the switch from IR to ON position.	Image is present. Red light is flashing.  Permanent red glow is absent
15	Gain Control (for SiriusM)	Rotate the gain control knob to verify that it adjusts the screen's brightness level.  Inspect for a broken or missing knob.	Knob does not adjust the screen's brightness level.
16	Viewed Image	Inspect for any operational defects (refer to Part 4.3.1: Identification of Operational Defects).	Shading, edge glow, flashing, flickering, and intermittent operation, or excessive cosmetic defects are found.

**AFTER CHECKING PROCEDURES**

17	Turn the unit OFF. Verify that the green glow fades from the eyepieces.  Remove the battery.  Return the unit and all accessories to the soft carrying case.
----	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## 4.2 TROUBLESHOOTING

### 4.2.1 OPERATOR TROUBLESHOOTING

The purpose of troubleshooting is to identify the most frequently occurring equipment malfunctions, their probable causes, and the corrective actions required to fix them.

Table 4-2 lists common malfunctions that may occur during the operation or maintenance of the Sirius. Perform the tests, inspections, and corrective actions in the order listed in the table.

**This table does not list all of the malfunctions that may occur with your device, or all of the tests and corrective actions that may be necessary.** If you experience an equipment malfunction that is not listed, or is not fixed by the corrective actions listed in the table, please contact EOC Company's Customer Service center.

**TABLE 4-2. OPERATOR TROUBLESHOOTING**

MALFUNCTION	PROBABLE CAUSE/TEST/INSPECTION	CORRECTIVE ACTION
Monocular fails to activate.	Battery is dead, missing or improperly installed.	Replace the battery or install it correctly.
	Battery contact surfaces or contact springs are dirty or corroded.	Clean the contact surfaces with a pencil eraser and/or alcohol and cotton swabs.
	Defective image intensifier.	Please contact Customer Support.
Battery adapter difficult to remove.	Check for damaged battery adapter and battery cap.	If damaged please contact Customer Support.
IR illuminator fails to activate.	Turn the IR illuminator on in a dark area. Visually estimate whether or not the observed scene is illuminated.	If the IR illuminator fails to activate, please contact Customer Support.
LED indicators fail to activate.	Visual inspection.	Please contact Customer Support.
Poor image quality.	Check objective lens or eyepiece focus.	Refocus the lens.
	Check for fogging or dirt on the lens.	Clean the lens as detailed in Part 4.4.2. If image quality is still poor, please contact Customer Support.
	Damaged optical components.	Please contact Customer Support
Light is visible around the eyecup.	Check the exit pupil distance value.	Readjust for proper eye-relief distance.
	Check the eyecup resilience.	If the eyecup is defective, please contact Customer Support.
Focusing ring cannot be moved.	Check to see if the focusing ring is bent or broken.	If damaged, please contact Customer Support.
Eyepiece ring cannot be moved.	Check to see if the eyepiece ring is bent or broken.	If damaged, please contact Customer Support.

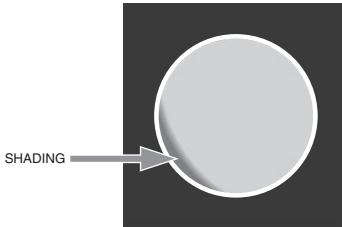
## 4.3 IDENTIFICATION OF OPERATIONAL DEFECTS

### 4.3.1 OPERATIONAL DEFECTS

Operational defects relate to the reliability of the intensifier, and are an indication of instability. If identified, the user will need to return the Sirius immediately. Operational defects include shading, edge glow, flashing, flickering, and intermittent operation.

#### A. Shading

If shading is persistent, you will not be able to see a fully circular image (Figure 4-1). Shading is a very dark, high-contrast area with a distinct line of demarcation present, and you cannot see an image through it. Shading always begins on the edge, and will eventually migrate inward until it spans across the entire image area. If you notice shading with your device, please contact Customer Support.



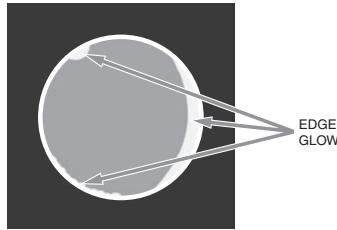
**FIGURE 4-1. SHADING**

**NOTE:**

Verify that any shading is not the result of improper eye-relief adjustment.

**B. Edge Glow**

Edge glow is a bright area (it sometimes appears to be sparkling) in the outer portion of the viewing area (see Figure 4-2). To check for edge glow, block out all light from the device by cupping a hand over the lens. If the image tube is displaying edge glow, the bright area will still show up; if edge glow occurs, please contact Customer Support.



**FIGURE 4-2. EDGE GLOW**

**C. Flashing, Flickering, or Intermittent Operation**

The image may appear to flicker or flash. If there is more than a single flicker, check for a loose battery adapter or a weak battery. If flickering continues, please contact Customer Support.

**4.3.2 COSMETIC BLEMISHES**

Cosmetic blemishes are usually the result of manufacturing imperfections. They **do not** affect the reliability of the image intensifier, and are not normally a cause for returning the Sirius. However, some types of cosmetic blemishes can worsen over time and interfere with the user's ability to properly operate the device during missions. If you believe a cosmetic blemish is cause for returning the device, record the specific nature of the problem on the maintenance forms and use the clock method to identify the position of the blemish and its approximate distance from the center (e.g., 5:00 toward the outside, 2:30 near the center, or 1:00 midway).

The following are examples of cosmetic blemishes:

**A. Bright Spots**

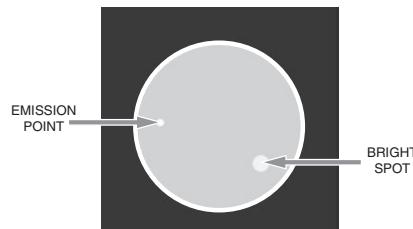
A bright spot is a small, non-uniform bright area that may flicker or appear constant (Figure 4-3).

Not all bright spots make the Sirius rejectable. Cup your hand over the lens to block out all light. If the bright spot remains please contact Customer Support.

Bright spots usually go away when all light is blocked out. Verify that any bright spots are not simply the result of bright light in the area you are observing. Bright spots are acceptable if they do not interfere with the user's ability to view the scene or perform missions.

## B. Emission points

Emission points are steady or fluctuating pinpoints of bright light in the image area that do not go away when all external light is blocked from the objective lens (Figure 4-3). The position of an emission point within the image area does not move. Not all emission points are cause to return the Sirius. Verify that emission points are not simply light sources present in the scene you are observing. Emission points are acceptable if they do not interfere with the user's ability to perform missions.



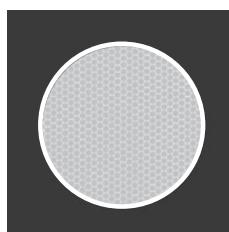
**FIGURE 4-3. EMISSION POINTS AND BRIGHT SPOTS**

## C. Black Spots

Black spots are cosmetic blemishes in the image intensifier or debris between the lenses. Black spots are acceptable as long as they do not interfere with the user's ability to observe the scene. No action is required if this condition is present, unless the spots interfere with the operator's ability to perform missions.

## D. Fixed-pattern Noise

Fixed-pattern noise is usually a cosmetic blemish characterized by a faint hexagonal (honeycomb) pattern that appears throughout the viewing area. This typically occurs in excessively lit environments or when viewing very bright lights (See Figure 4-4). This pattern can be seen in every image intensifier if the level of light is high enough. This condition is acceptable as long as the pattern does not interfere with the user's ability to view an image or interfere with their ability to perform missions.



**FIGURE 4-4. FIXED-PATTERN NOISE**

## E. Chicken Wire

Chicken wire is an irregular pattern of dark thin lines that can appear in the field of view, either throughout the image area or in sections of the image area (See Figure 4-5). In the worst-case scenario, these lines will form hexagonal or square-wave shaped lines. No action is required if this condition is present, unless it interferes with the user's ability to view the image or their ability to perform missions.



**FIGURE 4-5. CHICKEN WIRE**

## 4.4 MAINTENANCE

### 4.4.1 GENERAL

The section regarding Sirius operator maintenance consists of operational tests, inspections for the unit serviceability, cleaning and mounting procedures, troubleshooting, and replacement instructions for a limited number of parts. Maintenance instructions covered elsewhere in this manual (PMCS, troubleshooting, etc.) are not repeated in this section.

#### **CAUTION:**

The Sirius is a precision electron-optical instrument, and must be handled carefully at all times to prevent damage to the device's body or mechanisms.

### 4.4.2 CLEANING PROCEDURES

#### **CAUTION:**

The coating on the demist shield can be damaged if the shield is cleaned while wet, or if it is cleaned with wet lens paper. Clean the shield only when it is dry, and only use dry lens paper.

#### **CAUTION:**

Thoroughly dry each item before placing them into the storage case.

Clean the Sirius as follows:

1. Gently brush off any dirt from the unit's body using a clean, soft cloth.
2. Moisten the cloth with fresh water and gently wipe external surfaces (**except** for glass surfaces).
3. Dry any wet surfaces (**except** for glass surfaces) with another clean, soft, dry cloth.
4. Using a lens brush, carefully remove all loose dirt from the glass surfaces.
5. Slightly dampen a cotton swab with ethanol. Gently and slowly wipe the lenses (including the photoreceiver and the pivotal focusing lens). Without touching the lens holders, clean the glass surfaces in circular movements, beginning in the center and moving out towards the edge. Change the cotton swab after each circular stroke. Repeat until the glass surfaces are clean.
6. Clean the battery contact surfaces and contact springs with a pencil eraser and/ or alcohol-dampened cotton swabs.

Clean optional mounting devices with a soft brush (cloth), soap, and water as required.

Clean optional lenses as detailed in items 4 and 5 above (**except** for the demist shield).

### 4.4.3 BATTERY REMOVAL AND REPLACEMENT

Refer to Part 3.1.1 for battery installation procedures. No special tools are required to replace the battery.

### 4.4.4 GOGGLE KIT MAINTENANCE

#### A. Browpad Replacement

Replace the browpad when cracked, torn, or contaminated. Perform the following to remove and replace the browpads:

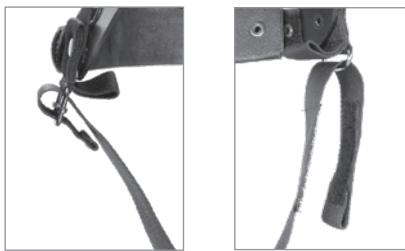
1. Firmly grasp the goggle kit and remove the old browpad.
2. Gently press on the new browpad. Gently smooth out any wrinkles in the new browpad.



**FIGURE 4-6. BROWPAD REPLACEMENT**

### **B. Chin Strap Reinstallation**

1. Detach the Velcro tape from the left side of the head-band and remove the chin strap. Unfasten the chin strap from the strap assembly.
2. Replace the chin strap by joining the sides of the Velcro tape on the left side of the head-band and threading the end of another strap into the corresponding buckle on the right side of the head-band.



**FIGURE 4-7. CHIN STRAP REINSTALLATION**

### **C. Chin Cup Replacement**

1. Detach the Velcro tape from the left side of the head-band and remove the chin strap.
2. Slide the chin cup out from the chin strap and replace it with a new one. After replacing the chin cup, attach the Velcro on the left side of the head-band.



**FIGURE 4-8. CHIN CUP REPLACEMENT**

## **4.5 SERVICE/PACKING AND UNPACKING**

### **4.5.1 RETURN INSTRUCTIONS**

For service, repair or replacements, please email [service@eoccompany.de](mailto:service@eoccompany.de).

To assist the Service Representative (SR) with determining if the item is repairable, please provide the following information:

1. Serial Number of the defective item.
2. Thorough description of the malfunction, defect or damage.
3. An explanation of how the malfunction, defect or damage occurred, if known.

If the SR determines that the item is under warranty or should be returned for repair, a Return Material Authorization number (RMA#) will be provided.

When returning the Sirius for service or repair, the following procedures should be followed to prevent any additional damage:

1. Verify that the Sirius is free of all contaminants such as dirt or any other foreign material.
2. Remove the battery.
3. Place the cap over the lens.
4. Place the Sirius in the hard shipping/ storage case or soft carrying case (if available). If the hard shipping/ storage case is not available, individually package each Sirius unit being returned in a suitable container.

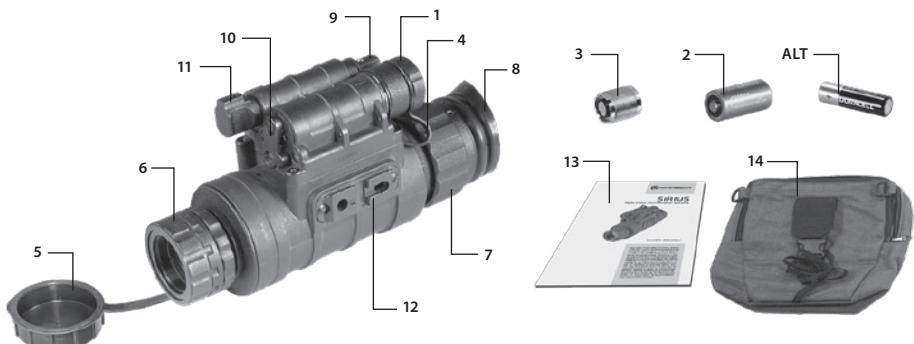
Place the Sirius and a copy of the test report or detailed description of the failure in a suitable pack-  
ing/ shipping container. Mark the package with the RMA#. Ship the items using the fastest, most easily  
traceable, prepaid method to EOC EUROPEAN OPTIC COMPANY GmbH, Dopplerweg 4A, 40591, Düs-  
seldorf, Germany.

## A. SIRIUS LIST OF SPARE PARTS

The parts authorized in this list of spare parts are required for operator maintenance. This list includes parts that must be removed in order to replace authorized parts.

ITEM NO. Column indicates the number used to identify items in Figure A-1.

PART NO. Column indicates the primary number used by the manufacturer to identify an item; this number controls the design and characteristics of the item by means of its engineering, specifications, standards, and inspection requirements.



**FIGURE A-1. SIRIUS SPARE PARTS**

**TABLE A-1. SIRIUS LIST OF SPARE PARTS**

ITEM NO.	DESCRIPTION	PART NO.
1.	Battery Cap	SIRIUSBC
2.	CR123A Lithium Battery	CR123A
ALT	AA Alkaline Battery	
3.	Battery Adapter	SIRIUSBA
4.	Battery Cap Retainer	SIRIUSBCR
5.	Lens Cap	SIRIUSLC
6.	Objective Lens Assembly	SIRIUSOLA
7.	Eyepiece Assembly	SIRIUSEPA
8.	Eyecup Assembly	SIRIUSECA
9.	Gain Control Knob	SIRIUSGCK
10.	Pivotal Focusing Lens	SIRIUSPFL
11.	Turn-pull Function Switch	SIRIUSFS
12.	Rail	SIRIUSPR
13.	Operation and Maintenance Manual	SIRIUSOUMM
14.	Soft Carry Case	SIRIUSSCC
16.	Shipping/Storage Case	SIRIUSSSC

## **B. PRODUCT WARRANTY REGISTRATION CARD**

In order to validate the warranty on your product, EOC Company must receive a completed Product Warranty Registration Card for each unit, or the user must complete warranty registration on our website ([www.eoccompany.de](http://www.eoccompany.de)). Please complete the included form (Appendix C) and immediately mail it to our Service Center: EOC EUROPEAN OPTIC COMPANY GmbH, Dopplerweg 4A, 40591, Düsseldorf, Germany.

## EOC PRODUCT WARRANTY REGISTRATION CARD

### PRODUCT INFORMATION

Product Name \_\_\_\_\_ Purchased From \_\_\_\_\_

Purchase Date \_\_\_\_\_ Product Serial # \_\_\_\_\_

### CUSTOMER INFORMATION

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Country \_\_\_\_\_ Zip \_\_\_\_\_

Day Phone # \_\_\_\_\_ Home Phone # \_\_\_\_\_

E-mail address \_\_\_\_\_

.....  
Customer Signature Required



## ALPHABETICAL INDEX

### A

Abbreviations 10

### B

Battery Installation 19

Black Spots 31

Bright Spots 30

### C

Cautions 2

Chicken Wire 31

Cleaning 32

Continuous Operation 14

Cosmetic Blemishes 30

### D

Diopter Adjustment 14, 23

### E

Edge Glow 30

Emission Points 31

Eye Relief 14

### F

Fixed-Pattern Noise 31

Flashing, Flickering, or Intermittent Operation 30

F-number 14

Function Switch 12, 23

### G

General Information 7

### H

Height 22

### I

IR Illumination Range 15

IR Illuminator 2, 12, 24

### L

Length 14

### M

Magnification 14

Maintenance 31

- Goggle Kit 32

- Preventive 27

Mounting 19

### O

Objective Lens Focus 23

Operating Instructions 18

Operational Defects 29

Operator Troubleshooting 29

### P

PMCS 27

Preparations for Storage 26

### S

Safety Summary 2

Shading 30

Spare Parts 35

System Description 11

### W

Warranty Information 8

Weight 13

Width 13



EOC EUROPEAN OPTIC COMPANY

EOC EUROPEAN OPTIC COMPANY GmbH  
Dopplerweg 4A,  
40591, Düsseldorf, Germany

[info@eoccompany.de](mailto:info@eoccompany.de)

**CAUTION:**

**This product contains natural rubber latex which may cause allergic reactions!** The FDA has noted an increase in the number of reported deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.

[www.eoccompany.de](http://www.eoccompany.de)